U.S. ARMY

SIMULATION, TRAINING AND INSTRUMENTATION COMMAND (STRICOM)

WARFIGHTERS' SIMULATION (WARSIM) 2000 PROJECT OFFICE

STATEMENT OF OBJECTIVES (SOO)

FOR THE

ENGINEERING AND MANUFACTURING DEVELOPMENT (EMD)

OF THE

WARSIM 2000 INTELLIGENCE MODULE (WIM)

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U. S. ARMY

WARFIGHTERS' SIMULATION (WARSIM) 2000
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STATEMENT OF OBJECTIVES (SOO)

FOR THE

WARSIM 2000 INTELLIGENCE MODULE (WIM)

1.0 INTRODUCTION

1.1 <u>Purpose</u>.   The purpose of this document is to state the Warfighters' Simulation (WARSIM) 2000
Intelligence Module (WIM) system's objectives. WIM is a fully integrated module of the WARSIM 2000 system,
including both architecture and design standards. This document discusses the initial objectives of the WIM system
from which the offeror will propose a Work Statement (WS), as a part of the proposal. An approved WS will
become part of the WIM engineering and manufacturing development contract. The proposed Work Statement shall
fully discuss how the offeror intends to integrate WIM as a component of WARSIM 2000.

1.2   <u>System description</u>. WARSIM 2000 is a Modeling and Simulation (M&S) system whose mission is to
provide a doctrinally correct Command and Control (C2) training environment for U.S. Army commanders and their
staffs. It will train commanders and staffs using both military and non-military training scenarios throughout the
operational continuum. All of the key decision making processes related to the successful completion of a particular
task or scenario will become a part of the training process which is modeled by the WARSIM 2000 system. The
system will be designed and built via an integrated effort between the Government and the contractor using high
performance computer technology, advanced software engineering techniques, common tools, and training audience-
validated algorithms and databases. The WIM system, whose objectives appear in this document, is expected to
become an integrated part of the WARSIM 2000 system and development. In itself, WIM shall be treated as a
separate contract from WARSIM 2000, but the WIM contractor shall be required to develop all software
cooperatively with the WARSIM 2000 Engineering and Manufacturing Development (EMD) contractor, based upon
the WARSIM 2000 architecture. The WARSIM 2000 EMD contractor has the primary Systems Engineering and
Integration (SE&I) responsibility. WARSIM 2000 is also intended to be tailored to meet the architecture and system
requirements of the Joint Simulation System (JSIMS) program being developed by the Joint Program Office (JPO).
 As WARSIM 2000 becomes integrated within JSIMS, the WIM contractor will be expected to fully integrate with
the processes, designs, and implementations developed by JSIMS, as well as other integrated efforts with WARSIM
2000, such as the development of the Functional Description of the Battlespace (FDB). The primary objective of
WIM is to provide the intelligence capability required to model the Intelligence Battlefield Operating System (BOS)
in WARSIM 2000. WIM will also replace the current functionality in the model known as Tactical Simulation
(TACSIM). The WIM contractor shall provide qualified personnel to develop software designs that are capable of
producing real world doctrinal intelligence through modeling and simulation and meet the training strategy proposed
in WARSIM 2000. WIM shall be a set of software applications which will satisfy the Intelligence training
requirements, simulation architecture and services, and will comply with the WARSIM 2000/ JSIMS interface
applications. In addition, because WIM is a part of the JSIMS domain, it is expected that WIM may be expanded to
meet the intelligence training requirements of the joint user community. The system shall be developed in such a
way that it supports this evolution, including working with the JSIMS development and integration contractor. The
system shall be required to operate in three security modes: 1) UNCLASSIFIED, 2) classified Collateral/ SECRET,
and 3) classified TOP SECRET/Sensitive Compartmented Information (TS/SCI), to support all of the training
required by the collateral-level WARSIM 2000 program, as well as higher levels for full Military Intelligence (MI)
training support. Classification levels may be segregated into categories (such as RELNATO, NOFORN, etc.), and
these categories shall be supported as well to restrict access from security threats.

1.3   <u>Scope</u>. The WIM shall provide intelligence training support during war gaming exercises to military

commanders and their staffs. The system design shall be developed with three main training objectives: 1) Support the training of independent Military Intelligence (MI) unit headquarters and staff, 2) Support training during a Command Post Exercise (CPX) in which MI staff play a part but are not the primary exercise focus, and 3) Support training during a CPX in which MI commanders and staff are not present. These capabilities shall be required to comply with the WARSIM 2000 System Specification (The WIM contractor shall prepare an annex to the WARSIM 2000 System Specification to include all of the WIM specific requirements). Additional tasks related to the integration of these requirements shall be discussed in the proposed Work Statement. WIM is required to perform in scenarios for multiple levels of threat to include, but not limited to, military conflicts, police actions, drug trafficking, world disasters, and civil disorders. WIM shall be capable of simulating the tasking, collecting, analysis, reporting, and dissemination of intelligence products associated with United States and foreign collection assets. This project has been identified as a Sensitive Compartmental Information (SCI) project and shall have the capability of replicating the collection capabilities of National and multi-service intelligence assets. The collected raw intelligence product will be distributed over real world communications systems to all exercise participants. WIM shall have the capability of operating and producing unclassified as well as classified training products. The contractor is required to develop and field the appropriate hardware platforms to support WIM during both EMD phases: Initial Operating Capability (IOC) and Full Operating Capability (FOC). This entire development process shall be accomplished via an integrated effort between the different Integrated Development Teams (IDTs) for this effort, including WIM, WARSIM 2000, JSIMS, FDB, National Air and Space Model (NASM), JSIMS Maritime Simulation, and National Simulation (NATSIM) personnel. However, the primary responsibility for Systems Engineering and Integration (SE&I) of WARSIM 2000 will be the WARSIM 2000 EMD contractor. Because WIM is considered a part of the overall WARSIM 2000 development, how the WIM contract will become a part of this integration effort shall be included in the WIM contractor's proposed Work Statement. The Work Statement should also discuss how the LCCS and PDSS will be accomplished during the EMD phases of WIM (IOC/FOC).

1.4 <u>Background</u>. The WIM program has been initiated to design, develop, produce and deploy, in concert with WARSIM 2000, a battle staff simulation system that will fulfill the intelligence training requirements as specified in the WARSIM 2000 System Specification and WIM System Specification Annex proposed by the contractor. WIM shall replace the Army intelligence model known as TACSIM. Upon successful completion of the WIM EMD phases I and II, STRICOM intends to proceed to the production phase III and procure production units using specifications, drawings and program plans developed from the contractor's proposed WS.

1.5 <u>Engineering and Manufacturing Development (EMD)</u>. WARSIM 2000 is currently aligned in an Evolutionary Acquisition process, whereby a core capability is identified and fielded and the system design supports a modular structure for future upgrades and changes as requirements are refined. This evolutionary acquisition strategy is well suited to high technology and software intensive programs where requirements beyond a core capability can generally, but not specifically, be defined. This process is considered ideal for WARSIM 2000, as many of the technologies (e.g. modeling cognitive processes) and outside system influences (e.g. interface to virtual and instrumented entities and interface to emerging Command and Control (C2) systems) dictate the need for flexibility in the system evolution. The key to success of fulfilling an evolutionary acquisition approach will be the software architecture. Because this fielding strategy will be used for WARSIM 2000, it will also be used for WIM. WIM shall be fielded in two operational EMD configurations, Initial Operational Capability (IOC) and Full Operational Capability (FOC), both aligned with the WARSIM 2000 Phase II (IOC) and Phase III (FOC). The proposed System Specification for WARSIM 2000 has allocated specific system requirements to IOC and FOC configurations. The WIM contractor shall prepare an annex to this System Specification to incorporate the additional IOC/ FOC WIM requirements necessary for successful program completion. The contractor shall use the System Requirements Document (SRD) for WIM as a starting point for preparing this annex. The IOC configuration for WIM is defined as the simulation system which incorporates all of the IOC requirements given in the System Specification. The FOC configuration for WIM is defined as the simulation system which has expanded on the IOC system to include all of the FOC requirements given in the System Specification. Again, WIM is not expected to duplicate WARSIM 2000 effort; meeting IOC/FOC requirements shall be an integrated effort between the contractors. At the completion of the FOC system, all components of WIM are expected to be completely developed and fully integrated with the WARSIM 2000 program.

1.5.1 <u>EMD Phase I</u>. The product of EMD Phase I will be an IOC configuration training system which supports intelligence and other command and staff training and meets the IOC requirements of the SRD. The IOC

configuration of WIM shall, at a minimum, replace the existing functionality within TACSIM. Evolution of requirements and definitiveness of capabilities are expected to be dynamic throughout the EMD Phase. In order to ensure the evolution of the requirements WIM shall follow the WARSIM 2000 development, shall produce separate but synchronized functional builds, and shall allow user and tester feedback during system development. This concept of functional builds adopts an evolutionary process, ensuring that the development of the system is not solely from a materiel developer perspective, but also integrates considerations from both the user and tester communities. IOC requirements are a subset of the full requirements for WIM. IOC requirements were selected based upon assessments of current Intelligence simulation technology, and to produce a system capable of replacing current TACSIM simulation within the time frame established for IOC completion. For those WIM requirements within the SRD which have not been identified for full implementation at IOC, the "hooks" which allow for the technology insertion at appropriate junctures of the program development shall be designed into the system. However, the WARSIM 2000 system is not sufficiently mature in its development to identify the specific data flow which will be required. WIM shall be constructed to accommodate these data flows and interfaces as they become available. EMD Phase I will result in the fielding and testing of several IOC configuration systems as required by the contract. The WIM systems shall be fielded at IOC IAW the WARSIM 2000 fielding strategy.

1.5.2 EMD Phase II. The product of EMD Phase II will be a WIM FOC configuration training system which is capable of supporting intelligence and other command and staff training and which meets the FOC requirements. The separation of the EMD phase into IOC and FOC development recognizes that limits in technology and resources will not permit development of an FOC system within the time that the users require a system to replace or augment current TACSIM simulator. EMD Phase II will result in the delivery of FOC software and hardware required for the retrofitting of the IOC configuration systems to meet FOC requirements. Additionally, expansion of the WIM system to a joint intelligence model if required by the JSIMS/ WARSIM 2000 effort may drive joint training requirements to be incorporated during this phase. The WIM systems shall be fielded at IOC IAW the WARSIM 2000 fielding strategy. All IOC/FOC fielded systems stated shall be included in the submitted proposal's cost sections. However, due to the length of the WIM development contract, it may be required to extend fielding of some of the FOC systems to a follow-on contract effort.

1.6 Test bed activities. The contractor shall be required to utilize the WARSIM 2000 Test bed to support the software development effort. Use of the existing WARSIM 2000 Test bed will allow for technology insertion, rapid prototyping activities, exploration of other contractor/Government products, and demonstrations. Due to the classification level of WIM (TS/SCI), the WIM contractor may be required to purchase additional WIM Test bed hardware and support software equivalent to or integrated with the WARSIM 2000 Test bed hardware and support software for installation in the WIM Integrated Development Facility (IDF) Segmented Compartmented Information Facility (SCIF) for test and integration purposes.

1.7 Contractor role and responsibilities. The contractor shall be required to design the system in accordance with the System Specification and to meet IOC and FOC delivery. The contractor shall be required to test, deliver and install several IOC configurations during the EMD phase I. The contractor shall be required to provide a WIM development suite consisting of both hardware and software to support the development effort. The WIM development suite shall become the property of the Government at the conclusion of the contract. The contractor shall be required to provide support in the operating, training and maintaining of the system software and hardware, onsite as well as offsite. This requirement will continue until transition to a Government-contracted LCCS/PDSS contract. The development of WIM will require a continuous awareness of emerging technologies and standards that apply to the simulation model. The contractor shall be required to participate in and monitor standards meetings, organizational meetings and working groups as necessary to facilitate the design of WIM in concert with emerging Government and industry simulation and computer system standards.

1.8 Working relationship with other contractors. The WIM development shall be done as a part of an integrated team. The lead for all Systems Engineering and Integration (SE&I) effort shall be done by the WARSIM EMD contractor. The WIM contractor shall communicate fully with the WARSIM 2000 EMD contractor as the primary development POC. However, in accomplishing this integrated effort, it may be necessary for the WIM contractor to also discuss and integrate efforts with other organizations including, but not limited to, 1) the Functional Description of the Battle space (FDB) contractor, 2) the Joint Program Office (JPO), 3) the JSIMS development contractor, and 4) the JSIMS Developing Agents (DAs), such as the contractors and program offices for the NASM,

JSIMS Maritime, and the NATSIM systems. As a part of this effort, the WIM contractor shall integrate with these SE&I activities to support an aggressive contracting strategy and to take advantage of new technologies developed by other contractors. The contractor shall actively and continuously coordinate with and cooperate with other contractors as required by the contractor's proposed WS for the purposes of Independent Verification and Validation (IV&V); Validation, Verification and Accreditation (VV&A) of the system, software, and manuals; to develop coordinated interfaces to training units' organizational systems; to support transition to a production contract for production and fielding including porting software to the production computational system; and to support transition to a LCCS/PDSS contractor. Interface with other contractors will be coordinated through the STRICOM WIM project management office.

   1.9   Integrated Development Facility. The contractor for the EMD phases of the WIM program shall be provided a Government controlled Integrated Development Facility (IDF) in Orlando, FL. The contractor's program management, and primary system and software development personnel shall have their permanent offices within the IDF. The IDF shall also have office space for the Government and contractor members of the concurrent engineering team, including, but not limited to WARSIM EMD personnel, JSIMS and JPO personnel, NATSIM personnel, and Defense Intelligence Agency (DIA) personnel. The IDF shall also include SCIF space large enough to allow for the development of the WIM system and house all appropriate development personnel. The WIM contractor shall provide a security representative to maintain the SCIF integrity. The Government may elect to require the WIM contractor to provide an equivalent IDF within 30 minutes drive of STRICOM, Orlando. The IDF will be required to provide SCIF space large enough to accommodate the current TACSIM hardware and the future WIM hardware within the same facility. The contractor's program management, and primary system and software development personnel shall have their permanent offices within the IDF. In addition, office space within the SCIF shall be required to support at least five Government onsite representatives, at least eight other members of the WARSIM 2000 Concurrent Engineering Team (i.e. JPO, DIA, etc.), and work areas for other contractors supporting the development of WIM (i.e. WARSIM EMD contractors, etc.). The WIM contractor will still be required to provide a security representative to maintain the SCIF integrity, regardless of location or provider.

   1.10   Functional Description of the Battle space (FDB). The FDB developed for WARSIM 2000 will define the physical, environmental, and behavioral characteristics of the battlefield, and provide standard descriptions of the components and characteristics of battlefield functions that must be represented to produce credible simulations of those functions. The FDB will be developed under a separate contract from both the WIM and WARSIM 2000 developments. However, the WIM contractor is expected to fully integrate with the development process and recommend appropriate expansions to the FDB to more fully define the components of the battlefield and the intelligence processes required to be represented by WIM.   The contractor shall be required to use the FDB throughout all phases of the design and development of software which represent components and characteristics of the battlefield.   The FDB shall be used as a source of information for system, domain, and software engineering. The Government may elect to require the WIM contractor to maintain those portions of the FDB which contain TS/SCI data.

   1.11   IOC and FOC requirements. IOC and FOC requirements for WIM will be defined by the contractor's proposed update to the WARSIM 2000 System Specification, in the form of an annex which can be attached to the WARSIM 2000 System Specification. The annex shall include specific requirements necessary for the integration of the WIM Intelligence BOS module into WARSIM 2000. The WIM System Specification Annex is expected to be a more robust expansion of the requirements defined by the Government within the System Requirements Document (SRD) for WIM. The requirements allocation and System Specification preparation will be coordinated with the other members of the WIM integrated team, including, but not limited to, the WARSIM 2000, JSIMS, FDB, NASM, JSIMS Maritime, and NATSIM programs. The WIM contractor is also expected to review and incorporate additional intelligence requirements which may result from the evolving Aggregate Level Simulation Protocol (ALSP), Distributed Interactive Simulation (DIS), High Level Architecture (HLA), Synthetic Theater of War (STOW), and Force XXI programs.

   1.12   Definitions.

      a.   Commercial Off-The-Shelf (COTS).   Unmodified equipment and documentation, produced by an established commercial manufacturer, used for other than Government purposes, and sold, manufactured, and delivered in substantial quantities to the general public during the course of conducting normal business operations. See FAR

15.804.3(c) and (f) for explanation of terms. The Government reserves the right to determine whether total quantities delivered are substantial. COTS equipment must be manufactured on a continuous production line, or in production lots under lot and configuration controls, using an established manufacturing facility with a documented production quality record.

b. Reference Library. The developing contractor shall have access of TACSIM documentation and software products pertaining to TACSIM. These documents are currently available upon request at the STRICOM Reference Library. In addition, access to the WARSIM 2000 and JSIMS documentation shall be made available through the same library. A catalog of all documentation available at the STRICOM Reference Library may be found on the World Wide Web (WWW) at http://www.stricom.army.mil/STRICOM/ DRSTRICOM/docats.html. In addition, JSIMS documentation may be found at http://www.jsims.mil.

c. System Software. All developmental and Non-Developmental Software, i.e. computer programs and their associated documentation regardless of the program storage medium, necessary to meet the requirements of the System Specification.

d. Government-Off-The-Shelf (GOTS) Software. Software that is provided by, or acquired from, a Government source (e.g., the Army Reuse Center or the STRICOM Reference Library) for use in development of the WIM system software. Software may be considered GOTS software depending on its ability to meet the WIM software requirements without modification, including maintenance modifications. Software that must be modified, or re-engineered, is not considered GOTS software, but is considered developmental software and is subject to all WIM software development requirements. The Government reserves the right to make the final determination that software qualifies as GOTS.

e. Developmental Software. Software (including documentation) which is designed and produced or modified by the contractor under the provisions of this contract.

f. Non-Developmental Software (NDS). Deliverable software, including documentation, that is reusable software or COTS software.

(1) COTS Software. Computer software which is used regularly for other than Government purposes and is sold, licensed, or leased in substantial quantities to the general public at established market or catalog prices. The Government reserves the right to determine whether quantities sold, licensed or leased are substantial.

(2) Reusable Software. Software that has been engineered specifically for reuse, documented, developed in Ada, tested and accepted under DOD-STD-2167 or DOD-STD-2167A by the U.S. Government, unmodified since acceptance, and meets performance specifications of this contract without any modifications to code or documentation.

g. System Specification. The WARSIM 2000 System Specification including the updates for the WIM training system requirements prepared by the contractor that meets and expands on all of the requirements given in the System Requirements Document (SRD) and Operational Requirements Documents (ORD).

2.0 APPLICABLE DOCUMENTS

For guidance only.

2.1 Government documents.

2.1.1 Specifications and standards.

SPECIFICATIONS

MILITARY

MIL-H-46855 Human Engineering Requirements for Military Systems, Equipment and Facilities

PD 5220.22-S Communications Security (COMSEC) Supplement to Industrial Security Manual for Safeguarding Classified Information

DoD Modeling and Simulation (M&S) High Level Architecture (HLA) Interface Specification

STANDARDS

MILITARY

MIL-STD-498 Software Development and Documentation

MIL-STD-973 Configuration Management

MIL-STD-1472 Human Engineering Design Criteria for Military Systems, Equipment and Facilities

MIL-STD-1771 Value Engineering Program Requirements

Defense Information Infrastructure Common Operating Environment Integration and Runtime Specification (DII COE I&RS), Joint Interoperability and Engineering Organization - Defense Information Systems Agency

2.1.2 <u>Other Government documents and publications</u>.

AMSTI-96-xxxx System Requirements Document (SRD) for the Warfighters' Simulation (WARSIM) 2000 Intelligence Module (WIM)

DoD 5000.59-P Modeling and Simulation (M&S) Master Plan

CJCSM 3500.4 Universal Joint Task List (UJTL)

(Unless otherwise specified, copies of federal and military specifications, standards and handbooks are available through the DOD single Stock Point: Standardization Document Order Desk, Building 4, Section D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.3 <u>Non-Government documents</u>.

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI/ASQC91-1987 Quality Systems, Model for Quality Assurance in Design/Development, Production, Installation and Servicing

ISO 9000-1 Quality Management & Quality Assurance Standards

(Applications for copies should be addressed to the American National Standards Institute, 11 West 42nd Street, New York, NY 10036)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

EIA/IEEE J-STD-016 Standard for Information Technology, Software Life Cycle Processes, Software Development, Acquirer-Supplier Agreement

IEEE STD P1498/EIA IS 640 Software Development

(Applications for copies should be addressed to Institute of Electrical and Electronics Engineers Customer Service, 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855-1331)

3.0 REQUIREMENTS

The work required by this contract shall be performed in accordance with the Government approved WS and System Specification prepared as a part of the submitted proposal. The contractor shall develop a plan to manage for change. Essential to this plan shall be a team approach with the Government for development, an evolutionary development strategy, requirements clarification, aggressive use of prototyping, and adherence to the WARSIM 2000/ JSIMS Domain Specific Software Architecture (DSSA). The contractor and all subcontractors shall support a concurrent engineering approach promoting a team effort with the Government for the development effort and decision making process. The contractor shall create and adhere to associate contractor agreements with other contractors developing WARSIM 2000, JSIMS, FDB, NASM, JSIMS Maritime, NATSIM, and other components of JSIMS in order to foster a cooperative development environment. The Government plans to participate in the tasks performed by the contractor monitoring products and process with the intent of reducing documentation delivered and increasing communication with the ultimate goal of ensuring a quality system meeting user needs.   The contractor's development effort shall support an evolutionary development paradigm. The contractor shall define a management and development approach that can be performed in an incremental manner. The management and development approach shall concentrate on the development of software components which meet the requirements of the System Specification and which are compatible with the WARSIM 2000/ JSIMS DSSA. In support of the concurrent engineering approach, the contractor shall involve the Government in each evolutionary phase of activity, and shall provide the Government continuous access to all development related data. The Validation Exercises (VEs) called for in the proposed WS shall align with the WARSIM 2000 VEs and be integrated into the development approach to provide for user feedback. The contractor's management and development approach shall also support a technology insertion strategy. The Government recognizes that technology will continue to mature as the development effort takes place. The contractor shall have a strategy to accommodate evolving technology and to manage risk associated with selecting technologies that are immature. The contractor shall participate in standards groups and working groups to remain abreast of selected technologies and influence their development. The contractor's management and development approach shall enable the contractor to perform in a Systems Engineering and Integration (SE&I) capacity for WIM and act as the integrator of subcontracting and other Government contracting efforts.

3.1 <u>EMD phases I & II</u>. The contractor shall design, develop, fabricate, test and field the WIM training system as specified in the proposed WS, the System Specification and the contract schedule. The contractor shall develop WIM in two developmental phases. EMD Phase I shall consist of development of WIM to meet the IOC requirements, and fielding of the system at locations specified in the contract schedule. EMD Phase II shall consist of further development of WIM to meet the FOC requirements. Following completion of EMD Phase I, fielded systems will be retrofitted by the contractor with FOC software and any additional equipment required by the final product baseline.

3.2 <u>Integrated development and management</u>.

3.2.1 <u>Integrated Development Plan (IDP)</u>.   The contractor shall perform all WIM development and management tasks IAW the IDP submitted in the contractor's proposal. The contractor shall develop, update and maintain the IDP as a living document through the life cycle of the program. The IDP's principle role is to identify and assure control of the overall development and management process for each configuration which meets the requirements of this contract. The IDP shall: (1) ensure that design and development of WIM software components are conducted in a cooperative and integrated manner with the design and development of WARSIM 2000, JSIMS, and the FDB, (2) ensure seamless integration of the plans, processes and tools used by WIM, WARSIM 2000, and JSIMS development and programs, (3) identify by reference detailed plans for systems engineering, domain engineering, software engineering, and Integrated Logistics Support (ILS) to be used by the WIM development team, and identify the relationships of these plans to those for WARSIM 2000 and JSIMS necessary to affect the seamless and cooperative integration of these development efforts. The following is the minimum information the contractor

shall address in the IDP (the term "annex" below indicates that a deliverable shall be due after contract award and during development in these specific areas to expand on both the information provided by the contractor within the proposal, and the existing WARSIM 2000 document to which the annex shall be attached):

    a.   Systems Engineering Management, to include system-level:

        (1)   Requirements analysis, definition and traceability (System Specification annex)
        (2)   Design and synthesis
        (3)   Configuration management
        (4)   ILS
        (5)   Reliability and Maintainability (RAM)
        (6)   Quality
        (7)   Safety
        (8)   Technical performance measurement
        (9)   Continuous Test and Evaluation (T&E)
        (10)   Validation Exercises (VEs)
        (11)   Security management
        (12)   Risk management
        (13)   Relationship to VV&A and IV&V activities and organizations
        (14)   Tailoring of commercial standards and specifications
        (15)   Life Cycle Cost (LCC) management process
        (16)   Logistics Support Analysis (LSA)
        (17)   Manpower and Personnel Integration (MANPRINT) Management Plan

    b.   Domain Engineering

        (1)   Domain definition
        (2)   Domain analysis (DATR annex)
        (3)   Domain implementation and architecture (DSSA annex)
        (4)   Domain management
        (5)   Software reuse (SRP annex)

    c.   Software Engineering

        (1)   Software development (SDP annex)
        (2)   Object-oriented programming integration
        (3)   Ada95 usage
        (4)   Evolutionary development processes

    d.   Program Management

    e.   LCCS/PDSS/Uplift Support of WIM

    3.2.2 Integrated Development Schedule (IDS). The contractor shall update and maintain the IDS submitted with the contractor's proposal, and shall use the IDS as the central coordinating and integrating document to manage the program. The IDS shall be a coordinated development with the WARSIM 2000 EMD contractor. The Government and contractor concurrent engineering team shall use the IDS to integrate milestones; required contractor and Government activities; major subcontractor and supplier schedules; and other contractors working on segments of WIM, down to the lowest manageable work unit. Upon request of the PCO, the contractor shall identify the man hour impact of program specific changes to the IDS by Contract Work Breakdown Structure (CWBS). The contractor shall assess and document, in detail, the degree of risk associated with the schedules developed. The contractor shall suggest alternative work around to avoid schedule risk. The contractor shall structure the schedule to coincide with the CWBS. The IDS shall be organized to provide a high level of detail for the immediate 6 month period, mid-level of detail for the following 12 month period and an aggregated schedule for the remainder of the

contract life. The IDS shall provide projected start date and projected completion date for each task identified. The IDS shall be updated periodically to reflect the levels of detail described above. Missed milestones shall be identified, explained, rescheduled and completion dates reestablished. The contractor shall analyze the impact on downstream milestones and develop a recovery plan. In addition, the contractor shall provide a synopsis of schedule problem areas or change pages identified or anticipated.

3.2.3 <u>Systems engineering</u>. The contractor shall implement a system engineering process to transform all system requirements into a set of lower level performance requirements that define the simulation components. The system engineering effort shall integrate all elements of a multi-functional engineering effort to meet system requirements. The contractor shall work with the Government's Subject Matter Experts (SMEs) to develop a conceptual design, to provide recommended improvements and to clarify elements. The contractor's development approach shall foster an environment in which individual CSCIs can be implemented independently by subcontractors and other development sources. The contractor's S/SDD shall specify standards for CSCI interfaces and implementation paradigms to allow other sources of development to implement CSCIs without involvement of the EMD contractor in their detailed design process. The contractor shall discuss integration with the WARSIM 2000 SE&I tasks to incorporate independently implemented CSCIs within the contractor's development baseline. The Government may elect to develop CSCIs identified in the contractor's S/SDD through other contracts, or by military services other than the Army, to include COTS or GOTS products if appropriate.

3.2.3.1 <u>System requirements analysis</u>. The contractor shall perform the necessary system engineering tasks to refine the system requirements. The contractor shall update the WIM portions of the WARSIM 2000 System Specification submitted with the contractor's proposal as required. The System Specification shall state the technical and mission requirements for the system, document design constraints, and define the interfaces among functional areas. The System Specification shall allocate requirements to WIM IOC and FOC configuration training systems, using the designation of IOC and FOC requirements in the SRD as a guide. The contractor shall perform the system engineering tasks IAW the processes defined in their IDP.

3.2.3.2 <u>System design</u>. The contractor shall integrate all WIM components with the proposed WARSIM 2000 Computer Software Configuration Items (CSCIs), Hardware Configuration Items (HWCIs), and manual operations. The contractor shall perform the system engineering tasks IAW the processes defined in their IDP. The contractor shall document the results of these efforts and provide input to the JSIMS/WARSIM System/Segment Specifications (SSS) and System/Segment Design Documents (S/SDD). The contractor shall maintain and update this input to the S/SDD as a living document throughout the evolutionary development of the WIM.

3.2.4 <u>Domain engineering</u>. The contractor shall conduct domain engineering activities necessary to ensure that the WIM products are compliant with the WARSIM 2000/ JSIMS DSSA. The contractor shall perform domain engineering activities for the Intelligence, Surveillance and Reconnaissance (ISR), Intelligence and Electronic Warfare (IEW), and Information Warfare (IW) subdomains and integrate the results and work products/ processes/ tools within the WARSIM 2000/ JSIMS domain engineering work products/ processes/ tools.

3.2.4.1 <u>Analysis of legacy system components</u>. Analysis of legacy system components and possibility of building upon the TACSIM infrastructure was discussed in the TACSIM Migration Strategy prepared by the MITRE Corporation in February 1995 (available in the STRICOM Reference Library). The contractor shall perform a feasibility analysis and development plan for reuse of the legacy TACSIM processes to include, but not be limited to, the sensor algorithms, the subsystems of TACSIM Analysis (TALON) and TACSIM After Action Review User System (TAARUS), the DMMAIN tasking utility, the TACSIM Interface Processor (TIP), and the TACSIM ALSP Translator (TAT). The analysis shall include a design description of the selected components analyzed, the extent of the re-engineering required including interface needs, and the applicability of the re-engineered component to the WIM requirements. The results of this analysis shall be documented in an annex to the WARSIM 2000 Domain Analysis Technical Report (DATR) and shall be presented at SDR.

3.2.5 <u>Software engineering</u>. The contractor shall perform the necessary software engineering activities to develop the WIM software components. The contractor shall perform the software engineering activities in a manner compatible with the WARSIM 2000 software development approach as defined in the WARSIM 2000 Software

Development Plan (SDP). The contractor shall document their software development processes, methodologies, and tools in the appropriate section of the IDP. If it is necessary to deviate from the WARSIM 2000 software development approach to meet WIM unique requirements, the contractor shall document the necessary changes and identify how the processes, methodologies, and tools integrate with that of WARSIM 2000.

3.2.6 <u>Concurrent engineering team</u>. The contractor shall establish a concurrent engineering team for the development of WIM. The concurrent engineering team shall be comprised of representatives from all engineering disciplines relevant to the analysis, design, development, testing, fielding, production, and life cycle operation and sustainment of WIM. The concurrent engineering team shall primarily consist of counterpart Government, WARSIM 2000 EMD and WIM development personnel. The WARSIM 2000 EMD contractor shall be the lead for systems engineering and integration effort. However, as discussed previously, it may be necessary for the WIM contractor to interface with other programs, such as the JSIMS/ JPO, JSIMS DAs (NASM, NATSIM, JSIMS Maritime), FDB personnel, and SME/ VV&A experts. The concurrent engineering team shall also include IV&V contractor personnel and other specialty contractors as determined by the PCO. The contractor shall provide meeting rooms and conference facilities when hosting support interaction of the integrated concurrent engineering team meetings. The contractor shall make available to the Government via the WARSIM 2000 CITIS all system, and software engineering products for concurrent review (e.g., Software Development Files, analysis and design information, source code, and documentation). The contractor shall provide the capability for the Government to review the engineering products using the contractor's selected system/software engineering environment tools. The contractor shall provide a list of all data developed for WIM.

3.2.6.1 <u>WARSIM 2000 Contractor Integrated Technical Information System (CITIS)</u>. The contractor shall implement and maintain hardware and software for the purposes of using the WARSIM 2000 CITIS. The contractor shall monitor and provide WIM-related supplements to the CITIS developed for WARSIM 2000. The CITIS provides a user-friendly means of searching, displaying and manipulating data. The contractor shall monitor the CITIS to stay abreast of technical interoperability issues with WARSIM 2000. The WIM contractor shall also develop and submit information to populate the CITIS as required to ensure integration of WIM development products with WARSIM 2000. This information shall include but not be limited to draft software documentation, source code, software development files in text and graphic formats, engineering drawings, and all delivered technical documents. The WARSIM 2000 CITIS is currently only accredited for the distribution of unclassified information, and classified technical data pertaining to WIM shall remain in the IDF SCIF.

3.2.7 <u>Hardware & software integration</u>. The contractor shall perform all activities necessary to integrate and assemble all hardware and software to achieve fully functional WIM IOC and FOC configuration training systems and support systems that perform and operate IAW the requirements of the contract. The contractor shall conduct an analysis of the impact of FOC requirements on system performance prior to selection of hardware for the IOC configuration. This analysis shall be considered in the selection of system hardware for the IOC configuration, to minimize the need for hardware retrofitting of fielded IOC configuration systems to meet FOC requirements. The contractor shall verify the complete integration of the hardware and software at each delivery site through a formalized Acceptance Test. The contractor shall implement a plan for selection and acquisition of the target computer system(s) such that the WIM computer systems are not technically obsolete at the time of acceptance of the system. The contractor shall conduct an analysis to determine the performance requirements for the target computer system. This analysis shall consider performance for both IOC and FOC configuration systems. This analysis shall begin at the start of system requirements analysis, shall be updated prior to each design milestone, and shall continue until the software design is complete. The status and results of this analysis shall be a subject for presentation at each design review. Final selection of the target computer system hardware shall be made by the Government/contractor concurrent engineering team. The evaluation criteria for potential target computer system(s) are as follows: ease of transporting developed software and development environment to other competing platforms and pending future platforms; minimization of the risk of inadequate processor throughput and memory capacity; the availability of suitable COTS software resources on the particular platform.

3.2.8 <u>Software reuse program</u>. The WIM development will leverage off the WARSIM 2000 software and hardware development. The contractor shall implement a software reuse program that will include both an engineering effort to foster the creation of reusable software components and a continuous evaluation effort to promote reuse or re-engineering of components from legacy simulation systems, commercial/DOD software

repositories, and other sources. The contractor shall document their specific plans and procedures for the implementation of the software reuse program in an annex to the WARSIM 2000 Software Reuse Plan (SRP). The SRP shall address the contractor's plans for conducting a software reuse program to effect both opportunistic and systematic reuse of software components and, how reuse concepts will be realized in each phase of software engineering. The contractor shall perform the software reuse program IAW the SRP. The contractor shall maintain and update the SRP annex submitted with the contractor's proposal as a living document throughout the development of the WIM system software.

        3.2.8.1 <u>Reuse of existing components</u>. The contractor is encouraged to consider reuse of software components (e.g., specifications, designs, code, test cases, documentation, sensor algorithm etc.) from the legacy simulation system TACSIM. The contractor shall perform a continuous evaluation of existing software components from commercial/DoD repositories, legacy simulation systems, and other available sources for potential reuse, or re-engineering for use on WIM to effect maximum reusability and minimum redevelopment of software components. There shall be no code directly reused from existing systems which does not meet the reusability requirements in the proposed WS (i.e., developed in accordance with Ada and meeting the demands of the WARSIM 2000 DSSA). There are existing "validated", or otherwise approved by the user, components/algorithms that the contractor shall use in the development of WIM. The contractor shall re-engineer these components into the selected design approach and the Ada programming language. These components are detailed design/code level information and are not expected to affect the contractor's proposed architecture or top-level design.

    3.3 <u>Continuous evaluation and testing</u>. The contractor shall conduct continuous evaluation and testing activities during the evolutionary cooperative development of WIM. The evaluation and testing activities shall be planned and performed cooperatively with the WARSIM 2000/ JSIMS evaluation and test organizations. Continuous evaluation and test activities shall include:

        3.3.1 <u>Validation Exercises (VEs)</u>. A VE will be the primary means to demonstrate incremental system functionality to Government, the user, and VV&A personnel. The VEs shall be conducted informally, but shall be structured to address specific goals and objectives. The VEs shall be integrated with the WARSIM 2000 and JSIMS VEs and VE schedule. Results of VEs shall be documented so that user feedback can be evaluated and integrated into the development via a formal Government CCB process, and so technical testers may make early assessments. Major VEs shall be structured as a mini exercise to the extent feasible, depending on the state of development. Major VEs shall be conducted at approximately one-year intervals or whenever major system builds are available for demonstration. Minor VEs shall correspond to the completion of increments of the evolutionary system design and provide the opportunity for VV&A personnel to review the design for adherence to established combat modeling criteria. Minor VEs shall typically be a documentation review, but may also demonstrate the results of rapid prototyping to address a specific combat modeling issue. Formal test procedures will not be required for VEs. The contractor shall describe the process for conducting VEs within the IDP. The contractor shall propose the schedule for these VEs in relation to the anticipated progress of the development within the IDS.

        3.3.2 <u>Qualification Tests (QT)</u>. Qualification tests will include the following:

        a. Formal Qualification Test(s) (FQT). FQT(s) shall be conducted by the contractor during software development and within the context of the contractor's software development approach. The objective of FQT(s) is to confirm that each CSCI meets all specified requirements.

        b. Pre-production Qualification Test (PPQT). The PPQT shall be conducted by the Contractor under the direction of Government representative(s) at the end of EMD phase I, prior to deliveries of the IOC WIM. The objective of the PPQT is to confirm that the system, as designed and built, meets all requirements for IOC and is supportable.

        c. Logistics Demonstration. Contractor shall demonstrate the supportability of the system with a tailored logistics demonstration and a maintainability demonstration conducted during the Pre-Production Qualification Test (PPQT) using appropriate operator and maintainer staff. The logistics demonstration shall also evaluate the logistics supportability of the system by: conducting fault isolation to the level proposed in his maintenance concept, repair and replace these components using the manuals and support equipment he intends to provide IAW his proposal. Contractor shall use Government personnel provided during the PPQT to demonstrate supportability of the system

and suitability of the manuals.

d.   Production Qualification Test (PQT). The PQT shall be conducted by the Contractor under the direction of Government representative(s) at the end of EMD phase II, prior to deliveries of the FOC WIM. The objective of the PQT is to confirm that the system, as designed and built, meets all requirements for FOC and is supportable.

Automated cold starts shall be performed as part of the PPQT and PQT processes. The cold start procedure may be repeated as often as required by the Government.

3.3.3 Acceptance Test. After each installation of the WIM system at destination, the contractor shall perform an acceptance test to prove that the system is functioning properly as installed. The Government will witness these tests.

3.3.4 Operational Test. Operational Test shall include the following:

a.   Initial Operational Test 1 (IOT-1). The Government will conduct IOT-1, with contractor support, at one or more user sites after the installation of the IOC WIM system. IOT-1 will address the effectiveness and suitability of IOC WIM system as a training device.

b.   Initial Operational Test 2 (IOT-2). The Government will conduct IOT-2, with contractor support, at one or more user sites after the installation of the FOC WIM system. IOT-2 will address the effectiveness and suitability of FOC WIM system as a training device.

3.3.5 Verification, Validation and Accreditation (VV&A) of components. The contractor shall interact with the VV&A agent as necessary to accomplish the validation of software components. The VV&A agent shall be considered part of the Government/contractor concurrent engineering team. The contractor shall provide the VV&A agent software component information (e.g., requirements, design, code, documentation, etc.) of selected components as requested. The contractor shall interact with the VV&A agent to assist in the development of a schedule for VV&A activities and the accreditation of selected software components. The VV&A schedule shall be tied to the evolutionary development schedule such that functional implementations within each evolutionary build can be accredited within that evolutionary cycle. The contractor shall track and maintain configuration accountability that all selected software components have been accredited by the VV&A agent prior to entering into Formal Qualification Testing (FQT). The WIM contractor shall incorporate WIM products within the WARSIM 2000 VV&A facility at Ft. Leavenworth, KS.

3.3.6 Independent Verification and Validation (IV&V). The contractor's software quality assurance activity shall ensure adequate interface and data exchange between the contractor's software development and IV&V organizations. The IV&V agent shall be considered part of the Government/contractor concurrent engineering team. The contractor shall provide the IV&V agency with access to classified data when provided with the appropriate security clearances, access to internal data, plans, software development folders, and applicable software. The prime and subcontractors shall provide the IV&V agency off-hours testing, make all necessary data available, and publish an IV&V schedule and an IV&V activity interface procedure in conjunction with the IV&V agency. The contractor shall make all products, documentation, software, and individuals responsible for software quality assurance and development available for discussion or review so that the IV&V agency can perform its job. These activities shall be documented by the contractor, and made available for Government review. The IV&V activities do not relieve the contractor of the responsibility for the performance of those tasks required by the proposed WS and applicable specifications and standards.

3.4 Management.

3.4.1 Program management. The contractor shall provide the overall management and administrative effort necessary to ensure that the requirements of this contract are accomplished. The contractor shall utilize metrics to track progress. The contractor shall plan, implement, and maintain a Life Cycle Cost (LCC) management process to minimize the cost of support. The contractor shall use LCC to evaluate design and support alternatives, and select

the resource support requirements. The contractor's cost tracking processes shall provide for tracking costs associated with the satisfaction of requirements provided through JSIMS and other DAs, as this becomes necessary. The contractor shall submit a program status report which shall document all issues relevant to cost, schedule and performance. As an attachment to the program status report the contractor shall provide a status of invoices submitted to the Government upon request. As a minimum the invoice number, date, amount, date of payment and amount actually paid shall be reported. This information shall be segregated by applicable contract type. A cumulative total for all contract types and all invoices shall also be reported. The Contractor shall assist the WIM Project Management Staff in performing and maintaining accreditation /certification tests for WIM systems at each site. The Contractor will contribute to sustaining of accreditation and certification tests of approximately ten sites by performing the following actions: 1) review and update test plans, 2) schedule and attend coordination meetings, 3) ensure test site personnel are familiar with test procedures and requirements, and 4) establish tracking procedures to monitor accomplishment of critical events leading up to the execution of the tests. The contractor shall provide the planning, coordinating, directing, implementing, monitoring, documenting and reporting of all tasks and requirements of the proposed WS. The Program Manager is the principle representative of the contractor and will deal directly with the contracting officer or his duly authorized representative on all matters pertaining to the contract. The contractor shall be required to coordinate and attend conference and meetings. The primary objective of the Program Manager shall be to provide overall management and administration as discussed in the proposed WS. In addition, the minimum CDRLs list provided with this RFP shall be reviewed and expanded, if necessary, for allocation to the proposed WS tasks.

3.4.2   Reviews, Meetings and Conferences. The contractor shall participate in reviews, meetings and conferences as required by the COR. The contractor shall prepare minutes of all reviews, meetings, trips, and conferences attended and include, at a minimum, the following information: date, place, purpose, appropriate references, list of attendees, agenda, executive summary, general discussions to include the names of the parties involved, a list of action items with suspense dates including the individuals responsible and the tentative time and place for follow on meetings that were scheduled. This does not mean, however, that the WIM contractor is responsible for preparing meeting minutes or reports for use by other contractors (e.g. taking the minutes of a WARSIM 2000 meeting). The minutes/ reports shall only be prepared with information relevant to the development of WIM. In the event that a meeting is attended by only WIM contractor personnel, all information at the meeting shall be considered relevant to WIM. The format and content of the reviews, meetings, trip, and conference reports may be tailored by the contractor in certain cases if agreed to by the Government.

3.4.2.1   Logistics Functional Meetings. Logistics functional meetings shall be conducted in conjunction with program reviews. Integrated Logistics Management involving all elements of logistics support shall be a normal part of the concurrent engineering process.

3.4.3   Contract Work Breakdown Structure (CWBS). The contractor shall prepare and maintain the CWBS, extending the Government preliminary WBS beyond the required level three to document how the contractor plans to accomplish the entire contract work scope and which are consistent with internal organizations and processes. The extended CWBS shall serve as the framework for contract planning, budgeting, reporting of cost and schedule status to the Government. Major elements of subcontracted work will be identified in the CWBS. The contractor shall be required to keep this document current through the life of the contract and providing the government with updates as required.

3.4.4   Logistics management. The contractor shall provide the Government a comprehensive plan to demonstrate how they intend to manage and execute the integrated Logistic Support Program (LSP). The contractor shall ensure that the system is designed to achieve an optimal support ability profile commensurate with system requirements, reduce LCC, and reduce personnel and manpower requirements. The contractor shall manage LCCS/PDSS until transition to the Government or follow-on contracts. The contractor shall provide and be responsible for all spares and support equipment, special handling equipment, and data. During transition, the contractor shall work with the Government provided contractor maintenance personnel in maintaining the system.

3.4.4.1 Logistics Engineering. The contractor shall prepare and maintain a record of the contractor's Logistic Support Analysis (LSA) efforts and provide the Government with a report that lists the quantity and range of support items required to facilitate a smooth transition of LCCS to the follow-on contractor. Lists should contain

part number, CAGE code, source of supply, price, unit of issue, and estimated quantities to provide 12 months support.. Use of commercial data obtained from previously performed commercial or industry LSA efforts is acceptable and the contractor may utilize this data to build the LSAR in lieu of repeating the specific task. Report provided shall be based on the results of the LSA efforts.

3.4.5 Subcontractor management. The contractor may utilize qualified subcontractor(s) in the development of WIM. The subcontractor shall perform in accordance with all terms, conditions and requirements of the basic contract. The subcontract period of performance, purpose and cost shall have prior approval of the Contracting Officer before it is executed or awarded. Uncleared subcontractors may not be used where prohibited by the activity (i.e. ability to handle or discuss TS/SCI information). The government shall incur no obligation to the subcontractor and a statement to this effect shall be placed in any such proposed subcontracts. The contractor shall establish, maintain and use a subcontractor management process that ensures performance to contract requirements.

3.4.6 Cost/ Schedule Control Systems Criteria (C/SCSC). The contractor proposal shall include their C/SCSC plan. This plan shall identify specific cost, schedule, and performance criteria systems. The contractor shall be required to provide this document in the form of Cost/ Schedule Status Reports (C/SSRs) IAW DoDD 5000.1 and DoDD 5000.2-R.

3.5 Training. All training shall be developed using the Systems Approach to Training. The receivers of this training will be the operators and maintainers of the WIM system, not the training unit personnel. WIM must not require any special training of the training unit personnel for its operation. The Contractor shall provide a training support team to perform on-site user training. The following shall apply: 1) develop training plans to support newly developed or enhanced software, 2) training documentation will be developed or modified to teach operator level personnel, 3) Contractor shall establish training schedules to support each training plan and make changes as required by the Govt., 4) training shall be conducted with on-site and off-site users.

3.5.1 Training identification. The contractor shall provide early identification and analysis of instructor, operator, maintainer, and support personnel tasks and performance requirements, in order to support subsequent design decisions and support analyses. Analysis shall be modified as required to remain current with the design effort and shall be available for Government review.

3.5.2 Training courses. The contractor shall analyze, design, develop, evaluate and present training courses for the Government/ contractor system instructors, system administrators, operators, maintenance and hardware and software support personnel. The courses(s) shall consist of a complete and detailed set of training products for use by either contractor or Government personnel with minimal instructor preparation. The contractor shall also prepare and present this training as a part of the transition to the WIM LCCS contract.

3.5.3 PDSS training. As part of the transition of PDSS responsibilities, the contractor shall prepare and conduct a training course for the purpose of indoctrinating the Life Cycle Software Engineering Center personnel with the operation of the SEE and the plans and procedures necessary to perform PDSS of the WIM system software.

3.6 Manpower and Personnel Integration (MANPRINT). Human engineering, safety, manpower, personnel, training, health hazard, and soldier survivability domain integration shall be performed by the contractor to ensure personnel-trainer effectiveness.

3.7 Special support equipment. The contractor shall determine support equipment requirements during system design and development. When existing support equipment and Test, Measurement, and Diagnostic Equipment (TMDE) satisfy requirements, they will be used. The contractor shall provide TMDE if required for operation and support. Ease of operation shall be a functional goal. Use of separate TMDE and test equipment shall be minimized by using emerging technologies.

3.7.1 Diagnostics. The system shall be designed with Built-In-Test/Built-In-Test Equipment (BIT/BITE) diagnostics, ease of access, and to minimize the need for associated tools, TMDE, and support equipment. Any TMDE required shall be standard or preferred. The contractor shall justify any unique support equipment or tools and TMDE through the development of the LSA process.

3.8 Trainer facilities. The contractor shall provide planning, analyses, and trade-off studies in order to meet requirements to install the WIM system in existing Government facilities. The contractor shall be required to assist in performing and maintaining accreditation /certification tests for WIM systems at each site. The Contractor will contribute to sustaining of accreditation and certification tests and participate in site surveys, site preparation and device installation. Planning shall account for:

    (1)   Site survey
    (2)   Trainer facilities and modification analysis
    (3)   Site preparation analysis
    (4)   Device installation
    (5)   Device installation support

3.8.1 Reliability and Maintainability (R&M). R&M requirements will be the same as those reflected in the WARSIM 2000 System Specification.

3.9 Life Cycle Contractor Support (LCCS). The contractor shall provide LCCS until transition to the Government or follow on contracts. The contractor shall provide total LCCS necessary to maintain each device, to include but not necessarily limited to support of all hardware, including all GFE, Information Security (INFOSEC) - including Communications Security (COMSEC) and Controlled Cryptographic Information (CCI) equipment, non-application software, tools and test equipment, and repair or replacement of repairable and replacement of non-repairable/spare items in an operable condition. Support of each fielded WIM system shall begin at the IOC milestone. The contractor shall train the Government and follow on contractors in operations and maintenance during transition and facilitate a smooth transfer in support. The contractor shall provide all technical data required by the Government to prepare the separate production and LCCS contract Request for Proposal (RFP) and for transition to the Government and follow on contractors. Operators and maintainers must be able to support the exercises and the state of the art technology equipment when operated in multi-level security environments for training with classified data in classified scenarios. The contractor shall perform minimal Logistic Support Analysis (LSA) on all procured hardware/ software and provide this information in LSA reports. The WIM system shall not rely on any Government resources to maintain and support the system. The contractor shall design the system so that units can use the simulation in all training environments. This includes training once deployed prior to the onset of hostilities. Contractor operators and maintainers shall support the training unit in all training environments. The contractor is responsible for mobilization efforts at the home station, transport of the equipment and personnel to operate and maintain the system, set up, and operate the system at the remote locations at no additional cost to the Government other than travel/per diem IAW the current Joint Travel Regulation (JTR). The contractor shall provide LCCS for all WIM fielded systems, to include systems fielded after the initial 3 systems delivered at IOC. The Preliminary WIM Fielding Plan will be in concert with the WARSIM 2000 fielding plan. The WARSIM 2000 fielding plan shall be provided in the STRICOM Reference Library. Discussion of the contractors' LCCS concept shall be provided in the proposed WS to include, but not necessarily be limited to, discussion of:

    (1)   LCCS
    (2)   Transition of support
    (3)   Initial spares (parts, tools, and test equipment)
    (4)   Training usage
    (5)   Maintenance considerations
    (6)   Hardware security
    (7)   Personnel expenditures required (overtime needed, travel required, etc.)
    (8)   Uplift support and standby coverage.

3.9.1 Transition of Support. The contractor shall support the transition to other agencies and contractors as the system is stabilized. Planning should cover all transfers in support. This planning shall include those actions required to ensure the effective, efficient transfer of responsibility, technical data, lists of support equipment required such as tools and test equipment, repair parts, spare parts, and training so that other personnel with comparable skills could maintain and operate the system.

3.9.2 Initial Spare Parts, Tools and Test Equipment. The contractor shall be fully responsible for supply support of the devices and shall obtain all support items to develop, test, operate, and maintain the system hardware and operating system software until transition. The contractor shall be responsible for providing all consumables and expendables used in the maintenance and servicing of each training device.

3.9.3 Training Usage. The contractor shall support the training of commanders and battle staffs as well as students in Army schools and must be capable of supporting the training schedule established by a corps and its associated units. This schedule is based upon having 50 weeks available for training per year with two non-training weeks for New Years holiday. A generic corps will have the following associated units that will conduct independent events: 3 divisions,. 12 division and 15 non-division brigades. Non-division combat and combat support units will conduct independent training events.

3.9.3.1 Administrative Down Time. The administrative logistics down time shall not exceed 30 minutes.

3.9.3.2 Non-chargeable Down Time (NCDT). NCDT is that portion of down time for which the contractor is not held responsible. NCDT may result from the following conditions:

a. Facility power outage

b. Fire or other facility problem not caused by contractor negligence

c. Negligence on the part of Government Personnel

d. Acts of God

e. Criminal acts by persons not employed by the contractor

f. When training device is not scheduled for use by the Government

g. When the Government elects to continue the exercise in a degraded mode

3.10 Post Deployment Software Support (PDSS). The contractor shall maintain the system software and PDSS responsibilities until transition to the PDSS agency for sustainment. During the EMD phase II, the contractor shall ensure that PDSS baseline changes to the IOC configuration are incorporated in the FOC development effort. As part of the transition of PDSS responsibilities, the contractor shall prepare and conduct a training course for the purpose of indoctrinating the Life Cycle Software Engineering Center personnel with the operation of the SEE and the plans and procedures necessary to perform PDSS of the WIM system software.

3.11 Uplift Support. The contractor shall provide extended exercise coverage for maintenance and operations hereafter called "Uplift Support" beyond the core eight-hour day. Uplift Support provides standby coverage and, if required, emergency on-site labor support, between 1700 and 0800 Monday through Friday and 24 hour coverage on weekends. The contractor shall provide any required on-site maintenance within four hours. Standby labor is mandatory during Uplift Support periods.

3.11.1 Uplift Support Requests. Requests for Uplift Support and deinstallation/reinstallation will be initiated by the appointed Technical Oversight Representative (TOR) or appropriate Government official and approved by the COTR. The request should be submitted not later than 15 days prior to the start of an exercise.

3.11.2 Equipment Movement. The contractor shall provide deinstallation/reinstallation prior to/after movement of equipment from one location to another. There shall be no cost to the Government for deinstallation/reinstallation other than the cost of repair for equipment damaged during Uplift Support and the cost of travel and per diem for contractor personnel supporting a remote site.

3.11.3 Uplift Support Cost. The cost of Uplift Support shall vary according to the type and quantity of

equipment covered, the type and length of labor support, and the length of the requirement. The Uplift Support equipment charges shall be attached to the delivery orders. The standby and emergency on-site labor charges, base labor charges, and the Uplift costs shall be listed in Section B of the Contract. The cost of Uplift Support shall be borne by the user, who is responsible for providing sufficient funds.

3.11.4 <u>Standby Coverage</u>. Standby coverage shall be provided by the contractor to establish a local POC to coordinate support requirements during training exercise periods.

3.12 <u>Special security requirements</u>.

3.12.1 <u>Personnel Security Clearance requirements.</u> An integral part of the Manning Requirements include the requirement for a security clearance. All contractor personnel assigned to an on-site position must be cleared for TOP SECRET with a Special Background Investigation (SBI) and be indoctrinated for Sensitive Compartmented Information (SCI) prior to beginning contract performance. Strict adherence to the policies and procedures governing security clearances is required. The contractor shall be prudent in the screening and selection of personnel that will be subjected to a background investigation:

a. Section II, Clearance Procedures, DOD 5220.22-R, Industrial Security Regulation.

b. Section III, Security Clearances, DOD 5220.22-M, Industrial Security Manual for Safeguarding Classified Information.

c. Chapter 3, Billets/Personnel Access Authorization and Security Education Program, DIAM 50-5, Volume I, Sensitive Compartmented Information (SCI) Contractor Administrative Security.

3.12.2 <u>Non-Repairable Hardware Items</u>. Any item that retains any classified information, either residual or active, can not be removed from the area for maintenance until it is certified as cleared of all classified information. Items requiring maintenance that can not be certified shall be replaced under the price of this contract and the defective item disposed of IAW the established regulations and procedures.

3.13 <u>Technical manuals and publications</u>. The contractor shall provide operator and maintenance, and commercial manuals. The manuals shall contain sufficient information to allow operators to operate and maintainers to maintain the system as intended. Software manuals should allow for support, training, and maintenance of the WIM development suite (SEE) for PDSS maintenance of the WIM software. Operational requirements of the WIM system shall be detailed in the contractor-provided System Specification.

3.13.1 <u>Operator and Maintenance Manual</u>. The contractor shall provide an Operator and Maintenance Manual for each system station that comprises WIM. The operator portion shall contain sufficient information for the user to operate effectively. The maintenance portion shall contain sufficient information for the maintainers to fault isolate and restore the system to its operational status. The system administration portion shall contain sufficient information for the system administrators to maintain/ operate the system and restore it to operational status. The manuals will be validated by the contractor and verified by the Government.

3.13.2 <u>Commercial-Off-the-Shelf (COTS) manuals</u>. The contractor shall provide COTS manuals for all commercial equipment and software used for the WIM. The contractor shall ensure that the commercial manuals contain all the information required to operate and maintain the equipment. Any shortcomings shall be corrected by the contractor and submitted as supplemental data. A listing of the manuals including part number and title shall be provided with the contractor's proposal.

3.14 <u>Packing, storage and transportability</u>. The contractor shall establish a packing, storage and transportability process which identifies the most economical practices for preservation, packing, storage and transportation and which will result in the most effective means of satisfying these requirements. The contractor shall describe system unique requirements for Packaging, Handling and Shipping (PHS) and shall describe management responsibilities and procedures to ensure that PHS requirements are identified and met in a timely manner. The fixed site portion of the system shall be installed in environmentally controlled facilities.

3.15 Data.

3.15.1 Data library. The contractor shall establish and maintain a data library consisting of Army publications, technical manuals, system technical descriptions, and software documentation, and all other data needed for the development of the training system. The contractor shall develop and maintain a master listing of all data and documentation obtained for use by the development team.

3.15.2 STRICOM Reference Library. The Government will provide the contractor access to the STRICOM Reference Library. The contents and intended uses of the data available within the STRICOM Reference Library are described on the World Wide Web (WWW). Contractors are provided access to the STRICOM Reference Library for the purposes of information and guidance. The STRICOM Reference Library will be updated with appropriate documents throughout the life of the WARSIM 2000 program. A catalog of all documentation available at the STRICOM Reference Library may be found on the World Wide Web (WWW) at http://www.stricom.army.mil/STRICOM/ DRSTRICOM/docats.html. In addition, JSIMS documentation may be found at http://www.jsims.mil. The contractor is encouraged to identify other Government documents which would be useful to the WARSIM 2000 program which might be added to the library.

3.16 Manning Requirement. The contractor shall provide on site programmers/ software engineering and other support personnel to fulfill the requirements of the proposed WS. It is highly desirable that personnel selected for this contract effort be familiar with the military environment. An integral part of the Manning Requirements include the requirement for a security clearance. All contractor personnel assigned to an on-site position must be cleared for TOP SECRET with a Special Background Investigation (SBI) and be indoctrinated for Sensitive Compartmented Information (SCI) prior to beginning contract performance. Strict adherence to the policies and procedures governing security clearances is required. The contractor shall be prudent in the screening and selection of personnel that will be subjected to a background investigation.

4.0 ADMINISTRATION SUPPORT

The Contractor shall provide general administrative and computer center services to support the project personnel and other contractor personnel assigned to perform WIM support. The Government at its option shall require the contractor to provide a Contractor Special Security Officer (CSSO) responsible for administrative and physical security, and visitor control of the SCIF facility.

5.0 GOVERNMENT FURNISHED EQUIPMENT/ GOVERNMENT FURNISHED MATERIALS

The Contractor shall be required to maintain and be held accountable for Government Furnished Equipment that is provided in support of this contract IAW AR 735-50. The following shall apply: 1) inventory accountability will be controlled by the government with bi-annual inspections of equipment performed by the government Project Director, 2) the government Project Director shall provide a complete inventory list of GFE and GFM to the Contractor and upon award an audit shall be performed collectively.

6.0 CONTRACT TECHNICAL MANAGEMENT

Technical management of the WIM contract is accomplished through the appointment of representatives of the Contracting Officer. The Contracting Officer's Representative (COR) is responsible for the overall technical management and is the interface between the Requiring Activity and the Contracting Officer for both technical and financial matters.

6.1 On-Site Management. An integral part of technical management requires accounting for expenditures as related to the performance of the proposed WS tasks and contract manning. Due to the geographical separation of the WIM development and the fielded WIM sites, an Alternate COR (ACOR) will be required to perform contract management and to assist/ support the COR in the performance of those on-site functions necessary to effectively fulfill COR contract responsibilities. ACORs are appointed to assist with those technical management functions that can best be performed by the Government.

6.1.1 <u>COR Duties</u>. The specific duties of the COR and those duties delegated to the ACOR will be identified in letters of instructions from the Contracting Officer. The primary technical management functions of the COR and ACOR include:

    a.   Assign and set priorities of WS tasks.

    b.   Monitor/ evaluate and report contractor's performance.

    c.   Provide technical guidance to the contractor.

    d.   Monitor/ report contract expenditures.

    e.   Authenticate Material Inspection and Receiving Reports, DD Form 250.

    f.   Approve Uplift Cost for exercise/ Uplift Support.

6.1.2 <u>ACOR Duties</u>. A substitute ACOR can also be appointed to the ACOR duties during this absence. The COR and ACOR will designate government individuals to assist in the performance of their duties under the condition that the responsibility and approval authority of the COR/ ACOR can not be delegated.

6.1.3 <u>Non-Personal Services</u>. The WIM contract is a NON-PERSONAL SERVICES contract as defined in FAR 37.101.

6.1.4 <u>Appointments</u>. Specific personnel at PM-FAMSIM will be officially appointed as Alternate Contracting Officers Representatives (ACOR) and will represent the COR in the performance of their contract duties. These duties will be specifically identified in the respective ACOR Letter of Appointment. Each ACOR will be the primary government interface between the contractor personnel. The contractor interface counterpart to the ACOR will normally be the Contractor Program Manager representative on-site who, in addition to normal management and supervision of contractor technical engineering personnel, will receive contract tasking issued by the ACOR. The primary function of the ACOR shall be to review, establish and assign priorities for WS tasks and evaluate contractor work performance. Appointments to ACOR positions will be accomplished as follows:

    (1) An individual(s) will be nominated by the COR for appointment as ACOR. Upon review and approval by the COR, formal written appointment of the ACOR will be made.

    (2) Substitute ACORs will, in the same manner, normally be appointed to act in the capacity of the ACOR during his/her absence to assume signature authority for emergency purchases and travel is readily available.

7.0 GLOSSARY OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
AAR	After Action Review
ACOR	Assistant Contracting Officer Representative
ALSP	Aggregate Level Simulation Protocol
BBS	Brigade/ Battalion Battle Simulation
C2	Command and Control
CASE	Computer Aided Software Engineering
CBS	Corps Battle Simulation
CCB	Configuration Control Board
CCI	Controlled Cryptographic Information
CDRL	Contract Data Requirements List

CITIS	Contractor Integrated Technical Information Service
CLS	Contractor Logistics Support
COMSEC	Communications Security
COR	Contracting Officer Representative
COTS	Commercial-Off-the-Shelf
CPR	Cost Performance Reports
CSCI	Computer Software Configuration Item
CWBS	Contract Work Breakdown Structure
DA	Development Agent
DATR	Domain Analysis Technical Report
DIA	Defense Intelligence Agency
DIS	Distributed Interactive Simulation
DSSA	Domain Specific Software Architecture
EA	Executive Agent
ECP	Engineering Change Proposal
EMD	Engineering and Manufacturing Development
ESS	Environmental Stress Screening
FAT	First Article Test
FDB	Functional Description of the Battlefield
FOC	Full Operational Capability
FQT	Formal Qualification Test
HCI	Human-Computer Interface
HE	Human Engineering
HLA	High Level Architecture
HM	Hazardous Materials
HWCI	Hardware Configuration Item
I/O	Input/Output
IAW	In Accordance With
IDP	Integrated Development Plan
IDS	Integrated Development Schedule
IEW	Intelligence and Electronic Warfare
ILS	Integrated Logistic Support
IOC	Initial Operational Capability
IOT	Initial Operational Test
ISR	Intelligence, Surveillance, and Reconnaissance
IV&V	Independent Verification and Validation
JPO	Joint Program Office
JSIMS	Joint Simulation System
JTR	Joint Travel Regulation
LCC	Life Cycle Cost
LCCS	Life Cycle Contractor Support
LSA	Logistic Support Analysis
LSP	Logistic Support Package
MIPS	Millions of Instructions Per Second
NATSIM	National Simulation
NDS	Non-Developmental Software
ORD	Operational Requirements Document
OT	Operational Test
PCO	Procuring Contracting Officer
PDD	Product Definition Data
PDSS	Post Deployment Software Support
PEP	Producability Engineering Planning
PHS	Packaging, Handling and Shipping
PPQT	Pre-production Qualification Test
PQT	Production Qualification Test
QT	Qualification Tests

RAM	Random Access Memory
RFD	Request for Deviation
SAR	Safety Assessment Report
SCI	Sensitive Compartmented Information
SCN	Specification Change Notice
SDP	Software Development Plan
SDR	System Design Review
SEE	Software Engineering Environment
SE&I	Systems Engineering and Integration
SME	Subject Matter Expert
SOO	Statement of Objectives
SRD	System Requirements Document
SRP	Software Reuse Plan
SRR	System Requirements Review
S/SDD	System/Segment Design Document
STRICOM	Simulation, Training and Instrumentation Command
T&E	Test and Evaluation
TAARUS	Tactical Simulation After Action Review User System
TACSIM	Tactical Simulation
TALON	Tactical Simulation Analysis Operations Node
TAT	Tactical Simulation Aggregate Level Simulation Protocol Translator
TCP	Task Change Proposal
TIP	Tactical Simulation Interface Processor
TMDE	Test Measurement Diagnostic and Equipment
V&V	Verification and Validation
VE	Validation Exercise
VV&A	Verification, Validation and Accreditation
WARSIM 2000	Warfighters' Simulation 2000
WIM	Warfighters' Simulation 2000 Intelligence Module
WR	Work Request
WS	Work Statement

APPENDIX A

WORK BREAKDOWN STRUCTURE (WBS)

1.0	WARSIM 2000 INTEL MODULE SOFTWARE DEVELOPMENT PROJECT
2.0	PROJECT MANAGEMENT
2.1	PROJECT MANAGER
2.1.1	LABOR
2.1.2	SUPPLY
2.1.3	TRAVEL
2.1.4	LOGISTIC SUPPORT
2.1.5	PLANS & CONTROL
2.1.6	FUNDING
2.2	CONFIGURATION MANAGEMENT
2.2.1	CONFIGURATION CONTROL
2.2.2	QUALITY ASSURANCE
3.0	SYSTEM ENGINEERING
3.1	SYSTEM DESIGN
3.1.1	COMMUNICATIONS
3.1.2	PLANS & SCHEDULES
3.1.3	REQUIREMENTS & ANALYSIS
3.1.4	DATA BASE MANAGEMENT
3.1.5	ARCHITECTURE
3.1.6	PROTO TYPING
4.0	SOFTWARE DEVELOPMENT
4.1	DESIGN ANALYSIS
4.1.1	FUNCTIONAL DESIGN
4.1.2	ALGORITHM DESIGN
4.1.3	DATA BASE FILE DESIGN
4.2.	PROGRAM DEVELOPMENT
4.2.1	PROGRAMMING
4.2.2	DOCUMENTATION
4.2.3	TEST SUPPORT
4.3	DEVELOPMENT TESTING
4.3.1	TEST PROCEDURES
4.3.2	TESTING
4.3.3	TEST ANALYSIS
4.3.4	DEBUGGING PROCEDURES
5.0	INTEGRATION SYSTEM TEST
5.1	INTEGRATION TEST
5.1.1	TEST PROCEDURES SYSTEM LEVEL
5.1.2	SYSTEM INTEGRATION
5.1.3	SYSTEM PERFORMANCE ANALYSIS
5.2	SYSTEM ACCEPTANCE
5.2.1	TEST PROCEDURES
5.2.2	REQUIREMENTS SATISFACTION